

REMARKS

Status of Claims

Without prejudice, the claims have been amended to clarify the invention and facilitate prosecution. Specifically, independent claims 1 and 16 have been amended to clarify that the contacts extend forward into the receptacle from the rear section to a free end. Additionally, with respect to claim 1, the recitation that the plug complies to the RJ-standard has been deleted. It seems this limitation was inadvertently added to claim 1 in the last amendment. New claims 24-26 have been added. Support for these claims can be found on page 7, line 20 through page 8, line 9.

Matters of Formality

The Examiner objected to the previously-submitted new claims 21-28 since their numbering was not in accordance with 37 C.F.R. §1.126. The Examiner has renumbered these claims 16-23. In response, Applicants acknowledge the misnumbering and appreciate the Examiner's correction thereof.

Prior art Rejections

The Examiner rejected claims 1, 4 -13 and 16-23 under 35 U.S.C. §103(a) as being unpatentable over Kinoshita et al. ("Kinoshita"), U.S. Patent No. 4,647,136. In supporting the rejection, the Examiner stated that "Kinoshita discloses . . . each contact being secured to a rear portion of said housing (e.g. at 12a or 12e), each contact extending forward from said rear portion to a free end 12b such that a portion of said contact forward of said rear portion

electrically connects with a mating plug when the mating plug is received within said receptacle . . . ”

In response, Applicants submit that Kinoshita is devoid of any teaching or suggestion of a contact extending forward into the receptacle from the rear portion to a free end as explicitly recited in the claims by virtue of the amendment proposed herein. This is a significant feature of the claimed invention and offers a number of advantages, especially when combined with the card-edge receiving slot as recited in claim 1 (and its dependent claims) and with the relatively slender contacts as recited in claim 16 (and its dependent claims).

First, a forward-extending contact provides for a more compliant contact. Specifically, since the contact extends from back to front in the receptacle such that the free end of the contact is near the front, the contact can accommodate a great deal of misalignment at the front of the connector where such misalignment is most likely to occur. This compliance is enhanced even further by the relatively slender contacts as recited in depend claims 4-12 and independent claim 16 and its dependent claims.

Second, the configuration of the present invention offers enhanced electrical performance, such as lower impedance. Specifically, the plug-engaging portion of the contact, which electrically couples to the plug, is relatively close to the connection portion, which electrically couples to the printed circuit board. That is, the plug-engaging portion extends into the receptacle cavity directly from the rear portion which is proximate to where the connection portion electrically connects to the circuit board. This provides for a relatively short distance between the plug and the printed circuit board as opposed to common prior art contact configurations. In such configurations, contacts extend from a rear portion around

the perimeter of the housing before extending into the receptacle from front to back. Thus, the electric path between the plug and the printed circuit board of a typical prior art device is from the portion extending into the receptacle, up and around the perimeter of the receptacle and eventually back to the rear portion where contact is made with the printed circuit board. It should be clear, therefore, that the configuration of the present invention can dramatically reduce this distance between the plug and the printed circuit board.

The conductor distance between the plug and the circuit board in the claimed invention can be especially short when the connection end is synergistically positioned in a card edge connector as recited in independent claim 1 and its dependent claims. More specifically, such a configuration enables a single contact member to electrically connect the plug to the circuit board, thereby eliminating intermediate circuitry and simplifying the modular jack assembly and its connection to the circuit board. Accordingly, this design lowers costs and increases electrical performance and reliability.

On the other hand, Kinoshita does not disclose a housing in which the contact extends into the receptacle from the end portion to the free end, but rather discloses a receptacle configuration in which the contact 12 wraps around the dielectric housing 11 from an end portion 12c and extends into the receptacle from front to back (section 12b). Kinoshita not only fails to disclose a forward extending contact in the receptacle, but also lacks motivation for such a modification. To the contrary, despite disclosing alternative contact designs in six different figures, Kinoshita never mentioned the desirability of a forward-extending contact or even the shortcomings of a rearwardly-extending contact. Therefore, there is no suggestion

in Kinoshita to modify the connector disclosed therein in accordance with the claimed invention.¹

Further, with respect to dependent claims 4-12 and independent claim 16 and its dependent claims, Kinoshita does not disclose relatively slender contacts to improve compliance. With respect to these claims, the Examiner stated that "it is impossible to tell in most relevant prior art (e.g., Kinoshita) whether the prior art contacts would have met or deviated from standards promulgated after the invention. Similarly, for relevant prior art published after the standards, it is still generally impossible to tell whether the contacts meet or deviate from the standard, given that the relative strengths and dimensions are often not included in patent applications."

In response, Applicants acknowledge the Examiner's remarks as being valid, but respectfully submit that it not whether a particular device meets or deviates from a standard that is important. Rather, it is whether a device is intended to cooperate with a device of a particular standard, but, itself, does not comply with the standard that is critical. Applicants posit that, if a reference was so configured, this anomaly would be mentioned. Indeed, Applicants not only mention this feature in their own disclosure, but emphasize it as being patentable.

Furthermore, in response, to the Examiner's assertion that the deviation from the standard is a mere optimization, Applicants respectfully submit that it would not have been obvious to one of ordinary skill in the art to vary these dimensions as suggested by the

¹The lack of motivation to modify the connector disclosed in Laity (U.S. Patent No. 6,116,962), which disclosed a forward-extending contact, to have a card edge connector as disclosed in Kinoshita was already addressed in Applicants' previous reply of November 19, 2001.

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Examiner. As set forth in the previous reply, it is counterintuitive to deviate from a standard to improve the performance of the article governed by the standard. By decreasing the material of each contact, Applicants have unquestionably compromised the normal force that the contact can deliver to an RJ plug inserted into the receptacle. It is not obvious that an increase in durability and compliance of the contacts is worth this reduction in normal force. Again, Applicants respectfully request that the Examiner reconsider his position with respect to the claims and withdraw the rejection.

Conclusion

In light of the above remarks, an early allowance of the claims is earnestly solicited.
Thank you.

Respectfully submitted,



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Stephen J. Driscoll
Registration No. 37,564
Attorney for Applicant
The Whitaker Corporation
4550 New Linden Hill Road
Suite 450
Wilmington, DE 19808
Telephone: (302) 633-2763
Facsimile: (302) 633-2776

APPENDIX A

MARKED UP VERSION OF CLAIMS SHOWING CHANGES MADE

- 1 (Twice Amended) A modular jack connector assembly comprising:
a dielectric housing having a front and rear orientation and defining at least one receptacle adapted for receiving a[n RJ standard compliant]mating plug; a plurality of contacts disposed in said housing, each contact being secured to a rear portion of said housing, each contact extending forward into said receptacle from said rear portion to a free end such that a portion of said contact forward of said rear portion electrically connects with a mating plug when the mating plug is received within said receptacle; and wherein said housing defines a slot traversing said contacts and being suitable for receiving an edge of a circuit board, and wherein a connection portion of each contact extends from said rear portion of said housing into said slot such that when said housing is mounted to a circuit board a portion of said connection portion makes contact with the circuit board.
16. (Amended) A modular jack connector assembly comprising:
a dielectric housing having a front and rear orientation and defining at least one receptacle adapted for receiving an RJ standard compliant mating plug; and a plurality of contacts disposed in said housing, each contact being secured to a rear portion of said housing, each contact extending forward into said receptacle from said rear portion to a free end such that a portion of said contact forward of said rear portion electrically connects with a mating plug when the mating plug is received within said receptacle wherein said contacts are less thick and more narrow than those conforming to the RJ-standard[s].